Dinamika Pendidikan

Decision Model for Saving Stocks Based on TPB and Financial Literacy

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Abstract

This study investigated the behavior of investment decisions that were not only assumed on rationality but were also affected by other factors, such as psychological factors, one of which was financial literacy. There were so many causal studies of financial literacy and investment intentions. However, there were still issues of inclusion between studies. Therefore, this study adopted a theory of planned behavior, proposed as an explanatory model for investment intentions associated with financial literacy. By proposing attitude, subjective norms, and perceived behavioral control related to investment as a mediator of investment intention, the unit of analysis was students who were members of the capital market study group spreading across universities in Semarang. The sample used was 170 students conducted through a questionnaire survey, then analyzed descriptive statistics and SEM with the PLST Warp. The results showed that all variables, both attitudes, subjective norms, perceptions of behavioral control, significantly mediated the effect of financial literacy on investment intention in partial mediation. For future research, you can explore the variables of financial education as early predictors associated with this research model to get a holistic picture related to the effectiveness of student financial education.

How to Cite

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INTRODUCTION

Economic growth continues to increase, causing various businesses to continue growing and developing in Indonesia (Triwidisari, 2017). In 2019, Indonesia became one of the countries in Asia that experienced speedy economic growth, reaching 5.02% (BPS: 2020); more remarkable than the world economic growth, which only reached 3.2% (IMF: 2020). This phenomenon illustrates that the level of income and consumption and the purchasing power of the Indonesian people have an increasing trend. This increase indicates that the Indonesian people have the potential to invest.

However, public investment activities generally still take conventional investment in savings products or deposits in banks. Even though the rate of interest for savings is lower than the inflation, the actual investment value of people from savings will be lower in the future. This phenomenon can be seen from the ranking of the Asian investment index, which is in the 64th position (The Economist Intelligence Unit: 2020).

This phenomenon indicates that Indonesians have a bold tendency to invest in the investment sector with a high degree of certainty and tend to be high-risk averse. The absorption of funds from the public, both for investment in the real sector and the financial sector, has not been optimally absorbed. Changes in the economic environment related to investment, such as changes in investment regulations, the complexity of investment instruments, the complexity of investor characteristics, increasingly developing technology, and the increasingly integrated capital markets (Nofsinger, 2005: 151 in Sudirman and Dwidjosumarno, 2013).

The immaturity of financial investment should be viewed based not only on how to understand the investment process alone but also on making investment decisions. The financial behavior perspective shows that individual cognitive and affective behavior leads to rational behavior. The scope of behavioral finance is the application of human psychology in finance. In the past, financial researchers did not consider the influence of individual and environmental factors on investors' decision making (Xiao & Porto, 2017; Sivaramakrishnan, Srivastava, & Rastogi, 2017).

Many financial products, such as mortgages, leases, credit cards, business loans, are now available to all investors. Economic enhancement requires resources that are used wisely to obtain maximum benefits (Lusardi & Mitchell, 2014). The inadequate quality of financial information affects the decision-making process and causes increasing uncertainty in financial markets. (Cox, Brounen, & Neuteboom, 2015). Financial literacy (FL) support a more efficient management of financial resources. However, the consumption era has encouraged individuals in society to spend money without planning (Theodora, 2016).

Previous studies have shown that investors with low FL tend to make unprofitable investment decisions. It has been observed that investors with low levels of financial literacy try to avoid participation in the stock market and have a less diversified portfolio (Fedorova, Nekhaenko, & Dovzhenko, 2015). The world of finance is constantly changing, resulting in increasingly complex financial products requiring to stay updated with the latest financial information (Garg & Singh, 2018). This phenomenon is because the current tendency to invest is driven by economic factors and human behavior towards an investment.

This activity tends that in the real world of investment, the assumption of investor rationality is not easy to fulfill. Even in their daily activities, investors in the capital market often show behavior that is not in line with the assumptions of rationality and usually takes actions based on the intuition that is relatively deviant from these assumptions (Asri: 2013). Zhou and Khoa (2014), in their research through a survey of consumer finance on American students, explained that the investment portfolios of students in the United States were not well diversified. In addition, it was also demonstrated that students who had prospects would tend to have good choices in a portfolio.

From these problems, this study focused on the variables that affected making individual investment decisions. This study used FL as an independent variable with the mediating variables of attitude toward behaviour (ATB), subjective norms (SN), and perceived behavioral control (PBC) as antecedents of intention to invest (II) based on planned behavior theory (Ajzen, 1991). This activity was to understand that based on previous studies in everyday life, individuals do not always behave rationally. The intention is considered as a motivational factor influencing behavior. The intention shows how hard an individual is able to try or how much effort an individual puts into displaying a behavior. Therefore, it is essential to examine predictors of investment intention by investigating FL's impact on investment decisions with the mediating effects of ATB, SN, and PBC.

There are three fundamental determinants

of intention, namely the individual's ATB, the individual's perception of social pressure to do or not to do the conduct in question, and the aspect of internalized behavior control (Azwar, 2000). Ajzen and Fishbein explain the emergence of a specific behavior in individuals in the form of a theory called the theory of planned behavior (TPB), a socio-psychological concept to predicting human behavior. TPB explains the factors that influence individual behavior, which includes three concepts, namely: ATB, SN, and PBC.

The intention indicates how hard a person tries or how much effort the individual puts into displaying the behavior. The individual can decide whether to display that particular behavior or not (Ajzen, 1991). TPB has been applied in several studies related to investment behavior (Cooper & Schindler, 2011). Previous studies have shown inconsistent results. For example, Cuong and Jian (Alleyne & Broom, 2011; Cuong, P. K., & Jian, 2014) proved empirically that TPB had a significant impact on investors' interest to invest, from this it shows the importance of further research in understanding the antecedents of investing in stocks based on this theory.

FL is defined as the ability in reading, analyzing, managing, and communicating about personal financial conditions that impact material well-being. This literacy includes the ability to discern financial options, discuss money and financial matters without (or despite) inconvenience, plan for the future and respond competently to life events that impact day-to-day financial decisions, including in the general economy. (Vitt et al., 2000). According to Remund (2010), FL is one's ability to understand and use financial matters. Huston (2010) considers FL to include awareness and knowledge about financial instruments, business applications and their personal life.

Generally, the definition of FL includes balancing bank accounts, preparing a budget, saving for the future, and learning debt management strategies. Sivaramakrishnan et al. (2017) verified the effect of financial literacy on the decision to invest in the stock market. This study adopted the TPB to analyze investor participation in the Indian stock market. TPB conceptualizes consumer FL can impact PBC (Ajzen, 1991).

H1: There is an effect of FL on PBC to Invest
H2: There is an effect of FL on SN about Investment.
H3: There is an effect of FL on ATB of Investment

Perceived behavioural control (PBC) is the perceived ease or difficulty in carrying out behaviour (Ajzen, 1991). PBC is usually considered to consist of difficulty and controlling factors (Ajzen, 2000). PBC is a function of confidence control and ease of access to confidence control factors. Control is the presence or absence of resources and chances needed to perform definite behaviours. Meanwhile, the ease of access to the control factor assesses a person's interest in resources to obtain the expected results from behaviour (Chang, 1998).

Control is more important than attitudes and norms because it can directly influence behaviour. An example is money. In this case, students who have funds can buy existing savings stocks. They can also find out about new mutual funds that dare to invest. If these three things are fulfilled, and there is interest, then it is just a matter of waiting for the decision to save shares.

H4: There is a positive impact of PBC on II.
H7: PBC is a significant mediate effect FL on II.

According to Kreitner and Kinicki (2005), the subjective norm is defined as accepting social pressure to display a specific behaviour. According to Fishbein and Ajzen (1977), subjective norms are individual perceptions related to essential people, expecting individuals to do or not do certain behaviours. Critical people are included and then used as a reference or benchmark for direct behaviour. According to Mowen (1995), subjective norms assess what consumers believe they should do according to what people think. In other words, subjective norms incorporate the strong influences of the promoter group into the formulation of behaviour.

According to Hendarto, *et al* (2018), Subjective norms are social factors that reflect social pressure for individual societies to take or not perform an action / behavior. Ajzen (1991) defined that subjective norms are social pressure felt to do or not to do a behaviour. Subjective norms refer to the influence of family, peers, and the social environment. The environment can influence a person's behaviour. For example, in our daily life, we hang out with friends who smoke. Because many friends smoke, we will also smoke.

H5: There is an effect of SN on II.
H8: SN is a significant mediate effect of FL on BI.

Attitude is a general feeling that states a person's acquaintance with an object that drives his response, both in the form of positive and negative responses (Ajzen 1991). Attitude is a general evaluation that humans make of themselves, other people, objects, or issues. (Petty, Cocopio, 1986 in Azwar, 2000). Ajzen (1991) uses a two-component approach. An attitude is defined as a state of mental and nervous readiness, de-

monstrated through an experience, seeking a directional and dynamic influence on individual responses to all related objects and situations.

For a more precise understanding, the researcher used one of the empirical indicators of attitude, namely knowledge. Chen and Volpe (1998) previously stated that financial attitudes significantly affected making important investment decisions. They concluded that the impact of individuals' level of financial knowledge affected them on decision-making. It indicated that the knowledge-based attitude of students also influenced the decision to invest and save stocks.
H6: There is an effect of ATB on II.
H9: ATB is a significant mediate effect II.

There are still many causality studies on financial literacy and intention to develop, but there are still inclusion issues between studies. The purpose of the research is to determine the behaviour of investment decisions which are not only assumed on rationality but also based on other factors, such as psychological factors, one of which is financial literacy. The relationship model between the five variables FL, SN, ATB, PBC, II is as follows.
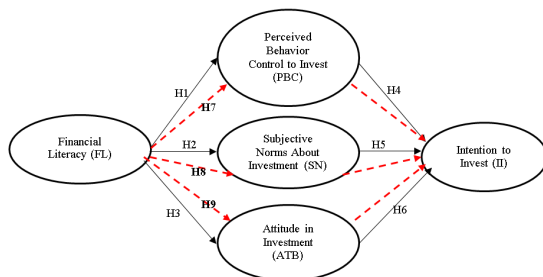
Figure 1. Conceptual Framework
Source: Processed Primary Data (2020)

METHODS

The research design used by the writer was a clausal associative design. With this research, it is possible to build a model that can explain, predict, and control a symptom based on theory. Sources of data in this study were students who were members of the Capital Market Student Community at public and private universities in Semarang. The sampling method in this study used a proportional cluster random sampling.

The minimum adequacy of the sample required for analysis of research data based on Partial Least Square SEM recommended by (Kock and Hadaya, 2018) with the inverse root square method with a minimum power level of 80% was 160. However, later in distributing questionnaires, 25% or 200 respondents were exaggerated to

avoid unbiased data from being used in the study.

Measurement of variables was carried out as follows: first, financial literacy was measured through 5 dimensions proxied by PISA 2018, namely (a) specific form of knowledge, (b) the ability or skills to apply that knowledge, (c) perceived knowledge, (d) good financial behaviour, and even (e) financial experiences. Second, attitude about investment, subjective norms about investment perceived behavioural control in investment, and intention to invest were proxied by Ajzen (2013) Theory of Planned Behavior Questionnaire Measurement Instrument Database Social Science, which was then adjusted to focus on investment.

The questionnaire used in this study was the tabulation questionnaire using the agree-disagree interval scale where each item or indicator was provided with a scale range of 1-5 where the scale 5 was for the extreme angle SS strongly agree and STS strongly disagrees. After the data was collected from the field, it was then processed first (editing and data conversion) then continued with the pilot test analysis. Based on the validity and reliability of the instrument, all instruments were declared valid, and all instruments were displayed reliably.

Then the percentage descriptive-based data analysis was carried out to describe each variable. Then proceed to inferential statistical analysis using WARP PLS-SEM, namely (1) model conceptualization; (2) determining the algorithm analysis method; (3) determining the resampling method, (4) describing the path diagram; (5) evaluating and estimating the inner model, or outer model, with the basic Warp mode, PLS mode A algorithm, to determine the significance of the t-statistical test and model fit test (Kock, 2019).

RESULTS AND DISCUSSION

The data collection was based on distributing questionnaires for eight months from August 2020 to January 2021. Because the condition was still in a pandemic process, and there was no face-to-face learning process, the questionnaire was distributed electronically via google form to 200 respondents. From 200 respondents, apparently, 168 respondents confirmed it. Although the amount of data that could be analyzed had decreased a lot, it still met the requirements for the adequacy of the sample required in the PLS-SEM analysis, using the inverse root square method (Kock & Hudaya, 2018). Based on the descriptive percentage analysis, each variable can be explained in Table 1.

From the results of the descriptive statistics in Table 1, it can be explained that the level of financial literacy had a score of 29.11 in the low category, while the attitude about money, subjective norms to invest and perceived behavioral control to invest had a score of 39.73, 47.89, 35. 91, with each in a medium category, and intention to invest had a score of 28.11 in the low category. Then proceed to testing or analysis on the outer model which consisted of testing the validity and reliability of the construct. For construct validity testing, convergent validity and discriminant validity were tested, while construct reliability was tested based on Cronbach's alpha value and composite reliability, while the test results on the outer model can be presented in Table 2.

The results of the outer model showed that each item variable met the criteria for convergent validity. That is, each factor loading of each item was above a cut value of above 0.5. Meanwhile, the discriminant validity results can be seen from the Average Variance Extracted (AVE) value above the cut value of 0.5. Meanwhile, the reliability of the research based on composite reliability was above 0.7, so it could be concluded that all variables were reliable. So that it can be stated that all of these items could form constructs on

these variables both on financial literacy, attitude of investment, subjective norms to invest, perceived behavioural control to invest, and intention to invest.

Furthermore, this study continued on the inner model test (goodness of fit test and t / hypothesis test). The goodness of fit test in this study consisted of several analyzes, namely average path coefficient (APC), average R-squared (ARS), average adjusted R-squared (AARS), average block VIF (AVIF), average full collinearity VIF (AFVIF), Tanenhaus GoF (GoF), Sympson's paradox ratio (SPR), r-squared contribution ratio (RSCR), statistical suppression ratio (SSR), nonlinear bivariate causality direction ratio (NL-BCDR). The goodness of fit results is described in Table 3.

Based on the results of the model fit test on the WARP PLS-SEM model that had been carried out, it can be seen that all of the goodness of fit test criteria, from the average path coefficient (APC) to the nonlinear bivariate causality direction ratio (NLBCDR), had met good criteria. or ideal. So it can be said that the evaluation or test on the inner model satisfied the WARP PLS-SEM criteria well, then it could be continued in hypothesis testing. The results of hypothesis tes-

Table 1. Descriptive Results per Variable

Variable	Average score	Category
Financial literacy	29,11	Low
Attitude about money	39,73	Moderate
Subjective norms to invest	47,89	Moderate
Perceived behavioral control to invest	35,91	Moderate
Intention to invest	28,11	Low

Source: Primary Data Processed (2020)

Table 2. Outer Model Test

Variable / Item	Loading factor	AVE Before elimination	AVE after elimination	Composite reliability Before elimination	Composite reliability after elimination
Financial literacy (12 item)	0,421 - 0.869	0.438	0.585 (2 item diremove)	0.824	0.867
Attitude about money (6 item)	0,435 - 0.851	0.442	0.54(1 item diremove)	0.780	0.843
Subjective norms to invest (6 item)	0,435 - 0.785	0.441	0.541 (1 item diremove)	0.797	0.813
perceived behavioral control to invest (6 item)	0,435 - 0.716	0.557	0.557	0.792	0.792
intention to invest (6 item)	0,435 - 0.716	0.457	0.557 (1 item diremove)	0.767	0.803

Source: Primary Data Processed (2020)

ting in this study can be shown in Table 4.

Based on the calculation of the path analysis, the results of the hypothesis testing test H1 p value was 0.007. This number was less than 0.05. This value means that hypothesis 1, which states that FL significantly affects PBC, was accepted. In the H3 test, the p value was <0.000. This number was less than 0.05. This value means that hypothesis 2, which states that FL significantly affects Subjective Norms of Investment, was accepted.

Furthermore, in the H3 test, the p-value was 0.008. This number was less than 0.014. This value means that hypothesis 3, which states that financial literacy has a significant effect on Attitude of Investment, was accepted, and the results of the H4 test p-value was 0,018. This number was less than 0.05. This value means that hypothesis 4, which states that PBC, was accepted.

Based on the H5 test, p value was 0.007.

This number was less than 0.05. it means that hypothesis 5 states that SN of Investment has a significant effect on II, which was accepted. In the H6 test, the p value was <0,000. This number was less than 0.05. This value means that hypothesis 6 states that ATB has a significant effect on II.

In the following test on H7, the p value was 0,007. It was less than 0.05. This value means that hypothesis 7 PBC significantly mediates the effect of FL on II, was accepted. While in the H8 test, the p value was <0,000 was less than 0.05. This value means that hypothesis 8, which states that SN about Investment significantly mediates the effect of FL on II, was accepted. For the H9 test, the p value was 0,018. This number was less than 0.05. This value means that hypothesis 9 states that ATB is significant in mediating the effect of FL on II.

Financial literacy was proven to have a significant effect on attitude of investment, subjective norms about investment, perceived behaviou-

Table 3. Model Fit and Quality Indices

Indices	Value	Cut Value	Criteria
APC	0.311, P<0.001	P<0.05	Good
ARS	0.371, P<0.001	P<0.05	Good
AARS	0.350, P<0.001	P<0.05	Good
AVIF	1.024	acceptable if <= 5, ideally <= 3.3	Ideal
AFVIF	1.200	acceptable if <= 5, ideally <= 3.3	Good
Tenenhaus GoF (GoF)	0.423	small >= 0.1, medium >= 0.25, large >= 0.36	Large
SPR	1.000	acceptable if >= 0.7, ideally = 1	Ideal
RSCR	1.000	acceptable if >= 0.9, ideally = 1	Ideal
SSR	1.000	acceptable if >= 0.7, ideally = 1	Ideal
NLBCDR	1.000	acceptable if >= 0.7	Good

Source: Primary Data Processed (2020)

Table 4. Hypothesis Testing

Hypothesis	Coefficient	Standard error	p-value	Remark
H1: There is an effect of FL on PBC to Invest	0.244	0.098	0.007	Accepted
H2: There is an effect of FL on SN about Investment.	0.371	0.092	<0.001	Accepted
H3: There is an effect of FL on ATB of Investment	0.210	0.099	0.018	Accepted
H4: There is an impact of PBC on II.	0.311	0.099	0.018	Accepted
H5: There is an effect of SN on II.	0.278	0.098	0.007	Accepted
H6: There is an effect of ATB on intention to invest.	0.317	0.092	<0.001	Accepted
H7: PBC is a significant mediate effect FL on II.	0.297	0.098	0.007	Accepted
H8: SN is a significant mediate effect of FL on II.	0.381	0.092	<0.001	Accepted
H9: ATB is a significant mediate effect II.	0.231	0.099	0.018	Accepted

Source: Primary Data Processed (2020)

ral control of investment, and intention to invest. This result was rational because someone who has good financial literacy was very skilled in reading, analyzing, managing, and communicating personal financial conditions that affected material well-being. Of course, in this context, someone who has good financial literacy will be able to differentiate financial options, plan for the future and respond competently to every life event that affects daily financial decisions, including events in the general economy.

In line with the results, according to Remund (2010), with good financial literacy, of course, someone will also understand both their attitudes and views about investing. Therefore, when someone understands financial matters well, they are also influenced to have subjective norms of perceived behaviour control material to have awareness and knowledge of financial instruments and their implementation. This definition shows that financial literacy includes balancing bank accounts, preparing a budget, saving for the future, and studying debt management strategies, as Huston (2010) stated. In line with the opinion (Ajzen, 1991) and Sivaramakrishnan et al. (2017), adopting the TPB to explain the intention of students to save stocks in the stock market is strongly supported by the results of this study.

Further research explains that perceived behavioural control on investment intentions was significant in mediating the effect of financial literacy on students' investment intentions. In this case, of course, students will have high investment intentions if they have the confidence to remain consistent in investing and maintain consistency in having investment perceptions. The results of this point were supported by the findings of Hariady (2012), which stated that high control over perceived behaviour had a positive and significant impact on one's behaviour.

Therefore, exercising control over the beliefs that exist in a person makes them consistent in doing something substantial. In line with these findings, the results supported the research where the control of the perception of a substantial investment behaviour caused a person to behave and vice versa. If the control over investment is weak, it will not encourage that person's behaviour.

Hariady (2012); Zhou and Phan (2014) research results showed that through the TPB, which showed the importance of perceived behavioural control in investing to encourage a person to show rationale, there will be an intention that starts from a behaviour. Positive and significant towards investment behaviour, so the better the control on perceived behaviour related to investment, the more likely they are to strengthen their intention to invest. Therefore, the perception of control over an investment behaviour is a step to increase the behavioural intention in students.

This finding means that students intended to invest or save stocks because the higher the perceived behaviour control with investing. The more individuals feel the many supporting factors and few inhibiting factors to perform a behaviour, the more they perceive themselves as easy to do that behaviour. Conversely, the fewer individuals feel the few supporting factors and many inhibiting factors to perform a behaviour, and the individual will tend to perceive it as challenging to do this behaviour (Ajzen, 2006).

This finding was also supported by Hariady's research (2012) suggested that the perception of control over behaviour positively and significantly influenced the intention of the behaviour. Of course, this was based on the findings of this study that the emergence of control perceptions of behaviour made a person continue to maintain these behaviours. These perceptions would increase the intention in students.

Behavioural attitudes or attitudes about investment behaviour had a positive and significant effect on investment intentions. They were significant in mediating the effect of financial literacy on investment intentions. This result means that the more significant the increase in student attitudes about investment behaviour, the greater the intention to invest. This finding was in line with the theory of reasoned action (Ajzen, 1973) or the theory of planned behaviour (Ajzen & Fishbien, 2000). A good attitude in looking at something will make the ability to determine existing behaviour.

Courage is deciding to invest will undoubtedly be one thing that can be encouraged through attitude to behave. It is one of the most critical things to become the strength of the heart to apply. In line with this statement, attitudes that influence belief will lead to action. Evidence of this is that the results of this study indicated that students' attitudes about investing had a positive and significant effect on investment behaviour. This finding showed that some of the things revealed in this study that was building a solid attitude would encourage people to behave. Ajzen & Fishbien (2000) stated that the strong attitude that exists in a person encourages behaviour.

The attitude is the degree to which personal feelings support or do not support a psychological object. So, in this case, of course, how the

students' attitude will undoubtedly encourage the intention to invest. In the research of Alleyne and Broome (2011), it was said that attitude was very influential on a person's interest in investing. To know which investment to take, it must be based on solid or sufficient knowledge. This research raised the phenomenon that subjective norms on investment decisions positively and significantly affected investment intentions, and subjective norms significantly mediated the effect of financial literacy on investment intentions.

This finding means that the greater the increase in subjective norms about investing owned by students, the greater the intention to invest. Regarding investment, of course, a solid intention to invest was driven by students' subjective norms. This finding was implicitly supported by Fishbein and Ajzen (1977), explaining that subjective norms are individual perceptions related to most people who are essential to him, expecting individuals to do or not do certain behaviour and important people him then. Used as a reference or standard to direct behaviour.

In line with this opinion, research conducted by Zhou and Phan (2014) also confirmed its findings that both women and men who played stocks in the Vietnamese stock market had a positive and significant effect on behavioural intentions. This finding means that in this case, the increase in subjective norms would affect the intention to behave or the intention to make decisions to invest in students in finance. Zhou and Phan (2014) also provided information that subjective norms that exist in a person certainly also positively and significantly influenced the decision to invest. It is based on subjective norms created by what someone believes they should do according to what people think.

In other words, subjective norms incorporated the strong influences of the promoter group into the formulation of behaviour. Therefore, the subjective norms in this study were subjective norms formed by students concerning the impact of family, peers, and the social environment. When many of his friends made investments, it would affect the investment actions taken by the student. Strong subjective norms in students would encourage strong investor confidence.

CONCLUSION

This research has proven the essence of applying the theory of planned behaviour in the context of behavioural intentions in saving stocks or investing in stocks by students who were members of the capital market study group commu-

nity in the city of Semarang. From the research results, all antecedents of behavioural intentions such as attitudes, subjective norms, and control of perceived behaviour related to saving stocks could mediate financial literacy on intention to hold stocks. Of course, this strengthened the foundation of previous research related to the elaboration study of financial behaviour intentions to overcome the impasse of inclusion results associated with the impact of financial literacy on investment intentions.

This research was limited to the context of testing the Theory of Planned Behavior with financial literacy as the main predictor in predicting investment behaviour. Of course, in the context of financial education, future research should consider the variable financial education or financial learning as an early predictor of investment behaviour so that studies on financial education will be more holistic. In the future, it is also necessary to expand the research object or unit of analysis along with the population, which may not be limited to universities in the city of Semarang, but universities in Central Java or Indonesia.

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